



CSC E 483





COMPUTER SCIENCE
& ENGINEERING
TEXAS A&M UNIVERSITY

Section 931

SPRING 2020

Computer System Design

 EABA 121B
TR 8:00 AM - 8:25 AM

 EABA 121B
TR 8:30 AM - 11:00 AM



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Graduate Teaching Fellow

Course Description

Project-based course focussing on skills for system integration in order to solve real-world problems in computer science and engineering. It involves a significant **Engineering Design Project** to be accomplished in a **group of 3-4 students**. Every project requires complete implementation, documentation, and demonstration of a **computing system with both hardware and software designs**. The focus is not only on the final product but also on the design methodology, management process, and teamwork.

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SYLLABUS

Each team will be required to manage its own efforts to complete its project in a timely manner. Group members will be required to keep individual lab notebooks recording their efforts and their personal impressions of the project. Students will be graded based on both the quality of the group product and their individual contributions.

Every team will be required to schedule a weekly meeting with the course instructor and the TA during the official class or lab hours. **These meetings must be attended by every group member**. Since the projects will be student-managed, the exact nature and style of these meetings is at the group's discretion. **However, every member of the group is expected to participate.**

At the end of the semester, each group will make a public presentation describing and demonstrating their work. These presentations **MAY** be open to the university community and visitors from industry.

Prerequisites ?

CSCE 315,
CSCE 462,
ECEN 325



Creativity



Enthusiasm



Care & Empathy



Team Work



Time Management



Perseverance



Documentation



Presentation



**SUCCESS
THROUGH
TEAMWORK**

Learning Outcomes

This course prepares students for engineering practice with major design experience. The students will leverage the knowledge and skills acquired in earlier course work. It is expected that successful participation in the course will allow the student to demonstrate

- an ability to apply knowledge of mathematics, science, and engineering (3.a)
- an ability to design and conduct experiments, as well as to analyze and interpret data (3.b)
- an ability to design a system, component, or process to meet desired needs (3.c)
- an ability to function on multi-disciplinary teams with equal contribution, maintain an inclusive environment, and manage time efficiently (3.d)
- an ability to identify, formulate, and solve engineering problems (3.e)
- an understanding of professional and ethical responsibility (3.f)
- an ability to communicate effectively (3.g)
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice (3.k)

You will also

- understand and utilize the engineering design method to generate potential solutions to a specific design challenge,
- understand the basics of project management including statements of work, work break-down structures, critical path identification, distribution of tasks, project tracking and status reporting as well as be able to generate status reports,
- understand professional communication methods and techniques including formal reports and presentations,
- clearly communicate ideas, status and test results through written reports,
- clearly communicate through oral presentations,
- rigorously define design requirements for potential solutions, and
- understand and incorporate engineering standards and multiple realistic constraints that include most of the following considerations: economic, environmental, sustainability, manufacturability, ethical, health and safety, social and political.

GRADING POLICIES



Grades are determined from both team (65%) and individual (35%) components accumulated during the semester



Both continued progress and the quality of your product (and other deliverables) will determine your grade



Final course grades will not be released until all the project deliverables are turned in, all borrowed items (e.g., keys, books, equipment) have been returned to their proper location or owner, and the workstations in the lab have been thoroughly cleaned up.



All team members are NOT required to be present at the time of the final delivery. Final project deliverables include

- a bound hardcopy of the final project report
- a USB Flash Drive including the following (organize into folders, e.g., Docs, Source, Hardware, Media, References, Freeware, etc.)
 - *Designs:* code , readme file, schematics , data , datasheets , freeware software tools, etc.
 - *Reports:* proposal, CDR , weekly reports , final report , and ALL presentations
 - *Audiovisual media:* close-up pictures of your system and a high-quality movie demo of the system working
- a final prototype, as well as any spare parts and supplies, as applicable
- software install, to be demonstrated on several machines
- final peer reviews
- Lab notebook, *if possible*, containing evidence of individual design contribution

Grading Structure

TEAM
(65%)



15%

PROJECT PROPOSAL

10%

CRITICAL DESIGN REVIEW

10%

WEEKLY PROGRESS

10%

FINAL COMMUNICATION

15%

PROJECT DEMO

5%

TEAMWORK

INDIVIDUAL
(35%)



5%

TEAMWORK REFLECTION

5%

TECHNICAL SURVEY

10%

NOTEBOOK

10%

PEER REVIEW

5%

PARTICIPATION

GRADING SCALE
(100%)

% Total	≥ 90	80-89	70-79	60-69	< 60
Letter Grade	A	B	C	D	F

PROJECT PROPOSAL

15%

The proposal describes the problem your team is solving, why it is important and challenging, and what others have already done in this domain. These points will be based on the originality, quality, and feasibility of the proposed computer system design comprising of both software and hardware system as the solution, the analysis of alternative solutions, the consideration of economic and societal aspects, and the project management approach. The proposal grade is divided into three parts: the initial draft (25%), class presentation and critique (25%), and a written proposal report highlighting improvements (50%). The template and detailed rubric will be made available on the course Github.

CRITICAL DESIGN REVIEW

10%

The CDR is a mid-semester evaluation of your project. It incorporates feedback from the proposal and describes in detail the proposed design. The CDR grade is divided into TWO parts: virtual class presentation and critique (50%), and a written CDR report highlighting improvements (50%). The template and detailed rubric will be made available on the course Github.

WEEKLY PROGRESS

10%

This grade will be based on your team's ability to manage **virtual (Zoom)** weekly meetings and maintain the project on schedule. Each team uploads a weekly report on GitHub by 5 PM on the day before the weekly meeting. The team leader will be responsible for leading the discussion during the weekly meeting, and encouraging members to participate. The team must appoint scribe(s) for generating the weekly progress reports based on the minutes of the meeting. Grading will be based on the quality of the reports and the ability to keep the project on schedule. The template will be made available on the course Github.

FINAL COMMUNICATION

10%

The final communication incorporates feedback from the CDR and describes the final solution in detail. It provides detailed experimental tests and validation results, engineering notes, and a user manual (readme). It also discusses the constraints the team had to satisfy (e.g., cost, time, technology limitations) and relevant industry standards used (e.g., coding, interfaces, safety). The grade is divided into two parts: written report (75%) and virtual LIVE (Zoom) class presentation (25%). The template and detailed rubric will be made available on the course Github.

PROJECT DEMO

15%

A grade will be assigned to your project based on the completion of all the objectives stated in your proposal, as well as on a live demonstration in class. The complexity of your project and the size of your team will be factored in. The demos will take place during **LIVE (Zoom) class presentation** of the week prior to final presentations to IAP (to be decided by department). The team needs to submit a Demo video prior to class presentation as a backup incase LIVE demo runs through any technical issues.

TEAMWORK

5%

Accomplishing the technical objectives of the project is not sufficient. Your team should also work effectively. A grade will be assigned based on the ability of your group to function as a team, manage roles and responsibilities, and resolve conflicts. Teams are more successful when they work together in the same physical space and integrate components frequently. Being **virtually present via ZOOM during lab timings** encourages collaboration and equal distribution of workload. Siloing is a recipe for unwanted surprises! Your team should create and agree on a regular work schedule, with even workload distribution and clearly defined responsibilities

Team Grading
Details

65%
GRADE



TEAMWORK REFLECTION 5%

You will complete a teamwork reflection assignment based on the required textbook The Five Dysfunctions of a Team: a Leadership Fable. The Google Form link to submit will be posted on Slack.

TECHNICAL SURVEY 5%

You will submit an annotated bibliography that covers a particular technical/scientific topic that is critical to the project and your technical duties on the team. The survey should cover both background material (e.g., fundamentals, theory, history) as well as related work (i.e., other people working on similar problems) and not overlap with other teammates. References should be from credible sources (e.g., peer-reviewed articles, patents, textbooks, technical reports), as opposed to blogs, posts in social media, or other self-authored sites. You will include 1-2 paragraphs for each reference summarizing its content and relating it to your project. The grade will be averaged over two iterations: an initial submission with 4+ references and an expanded submission with 8+ references. Upload the softcopy in the respective team GitHubs.

NOTEBOOK 10%

Design notebooks help you collect ideas, provide continuity between work sessions, and stay on track with the project. You are required to maintain an individual design notebook to collect any information relevant for the project including ideas, references, designs, and discussions. Your notebook may be paper (must be bound) or electronic. Your grade will be based on the evidence of engineering design (e.g., sketches, block diagrams, schematics, pseudo-code, experimental results, formal derivations), the regularity of your entries during the semester, and the clarity, legibility, and organization of your notebook. You MUST carry your Design Notebook to every VIRTUAL ZOOM weekly meeting. It will be averaged over 4 notebook checks throughout the semester: 3 announced checks and 1 check on completion.

PEER REVIEW 10%

Your performance will be evaluated by each of your team members throughout the semester. Peer reviews will be submitted on Google Forms. Your grade will be a function of the quality of the review you provide as well as how you are reviewed by your peers.

PARTICIPATION 5%

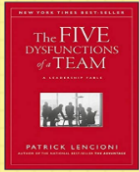
Participation is vital to your team's success. Your grade is a function of your participation in class, GitHub activity, attendance to meetings, engagement in discussions, and contributions to the team to realize overall design project.



Individual
Grading
Details

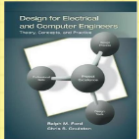
35%
GRADE





TEXTBOOK

The Five Dysfunctions of a Team: a Leadership Fable
by Patrick M. Lencioni (Jossey-Bass, 2002)
eBook available at TAMU Libraries



REFERENCE

Design for Electrical and Computer Engineers,
by Ralph Ford and Chris Coulston (McGraw-Hill
Science, 2007)



Fundamentals of Engineering Design, 2nd Ed.,
by Barry Hyman (Prentice Hall, 2003)

COURSE CONTENTS & SUBMISSIONS

GitHub Organization,
<https://github.tamu.edu/sp20-csce483-931>
All required course/lab notes, templates, rubrics, submissions,
project management will be done on course GitHub organization.
Teams will be created on GitHub who will then be responsible to
maintain their design project repository and ensure timely
submission. The teaching staff will also be tracking your
GitHub activity, as a team and your contributions, for the design
project. The Team Leader will be responsible for ensuring all
submissions are the latest and on time. The repository must be
visible to all team members, the instructor, and the TA.



COMMUNICATION

Slack Workspace,
Name: **sp20-csce483-931-csd**
Slack will be our official means of communication for all course-
related topics outside regular class and lab meetings. Please refer
to the introductory email on the class listserv to join Slack
workspace for our course. You may look up channel #slack-help in
Slack to get started. To reach out to the teaching staff digitally, you
may DM (direct message) us on Slack for a prompt
response. Download and install both mobile and desktop apps for
Slack. **Avoid email unless absolute necessary**



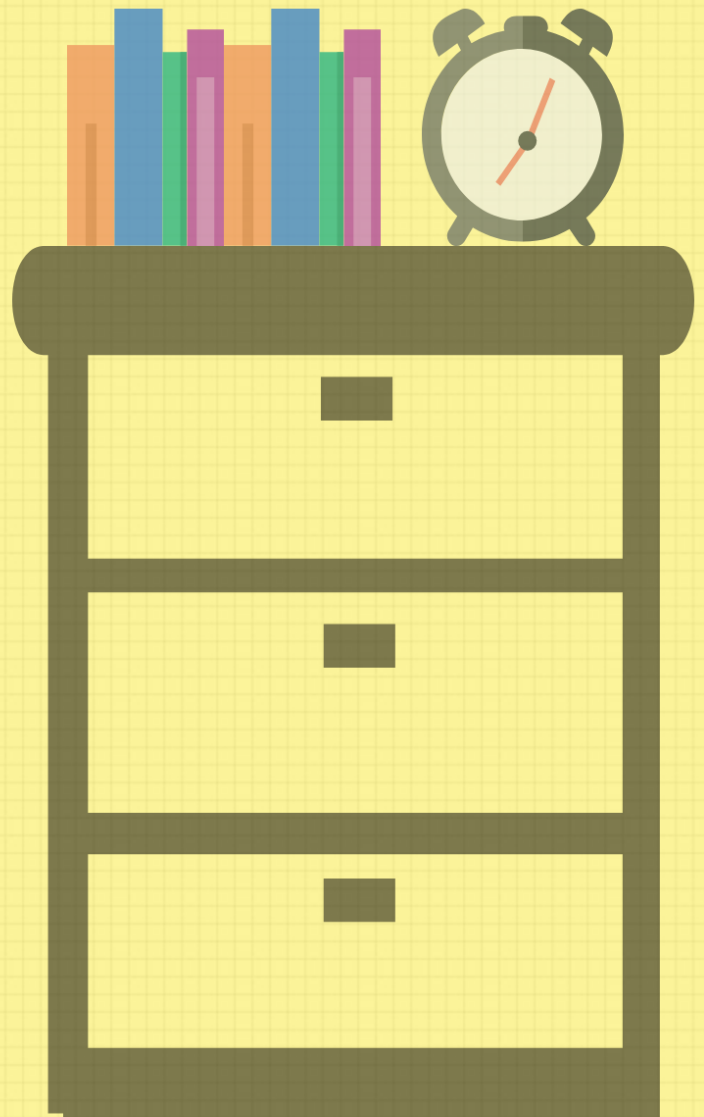
DOCUMENT PREPARATION

LaTeX
All major documents should follow the LaTeX templates provided
on our class GitHub. We encourage the team members to use
Overleaf, an online LaTeX editor (free version), to collaborate on
LaTeX documents. Documents such as the proposal, CDR, and the
final report must be submitted as both tex and PDF in the
respective folder of the team repository. The final report should
ALSO be submitted as a hardcopy in a professional format (e.g.,
spiral-binding). Don't forget to run spell check before submitting.



COMPUTER

Personal Laptop
We will be using ZOOM for remaining Weekly class Meetings and
Presentations. You are expected to get training with Zoom
from <https://provost.tamu.edu/keep-teaching#training>
or <https://provost.tamu.edu/keep-teaching#resources>



Late Policy & Attendance



Late Policy

Submission time is the timestamp recorded while uploading the assigned work on GitHub. Late work is defined when the submission time exceeds the due date and time.

Email submissions will not be accepted. It is your responsibility to make sure that the submission process is completed and that the correct document report is submitted to the correct place.

For team-based submissions (reports and slides) on GitHub, such as Project Proposal, CDR, Weekly Progress Reports, and Final Report, LATE WORK WILL NOT BE ACCEPTED UNDER ANY CIRCUMSTANCES. We believe that team leader along with the team members should make sure that submissions are on-time in case any member of the team is not available. It is the responsibility of every person to keep other team members, especially, the team leader aware of one's unavailability or absence.



Attendance Policy

Not attending weekly meetings harms the other members of your group and makes it much more difficult for the instructor to assess your contributions to the group effort. Therefore, attendance, punctuality and active participation in the weekly meetings are strict requirements. FAILURE TO ATTEND A MEETING OR LATE ARRIVALS (more than 15 minutes late) WILL BE REFLECTED IN YOUR INDIVIDUAL GRADE.

Emergencies, however, do happen. Lateness or absence can be excused if there is a valid reason. Illness, job interviews out of town, death in the family, inclement weather or accidents for commuters, etc., are valid reasons. Oversleeping, a term paper due, an exam to cram for, etc., are not valid reasons.

Ultimately, the instructor reserves the right to determine what constitutes a "valid reason" on a case by case basis. If you know you're going to be late or miss a class or meeting, please let the instructor and your teammates know, so that they may plan for your absence and make the best use of their time.



Course Schedule

Weekly Agenda (March 23 onwards)

Week	Date	Lectures and Events	Materials Due	Date	Lectures and Events	Materials Due
9	3/17/20	School Closed		3/19/20	School Closed	
10	3/24/20	Virtual Lab	CDR: PPT + Video(slide narration + Demo)	3/26/20	CDR Presentation: Zoom Watch Party (all)	Peer Review 2, Expanded Annotated Bibliography
11	3/31/20	Virtual Lab	CDR: Report	4/2/20	Zoom Weekly Team Meetings (all) + Virtual Lab	Digital Notebook Check 3
12	4/7/20	Virtual Lab		4/9/20	Zoom Weekly Team Meetings (all) + Virtual Lab	
13	4/14/20	Virtual Lab		4/16/20	Zoom Weekly Team Meetings (all) + Virtual Lab	Peer Review 3
14	4/21/20	Virtual Lab	Final: Video(Demo only)	4/23/20	Final Presentation: Zoom Watch Party LIVE (all)	Final: PPT
15	4/28/20	Redefined Day (Friday schedule)	Final: Video (slide narration + Demo)	4/29/20 (Wed) 5/1/20 (Fri)	IAP Presentation (TBD: either online or cancelled) Final Checkout	Final: Report, Peer Review 4, Digital Notebook Check 4, All Project Deliverables

MEET THE STAFF



GTF

Jyotikrishna "JD" Dass

PhD candidate, Dept. of CSE
Graduate Teaching Fellow

Office Hours:

Wed: 11 AM - 12 PM on ZOOM or by appointment

Correspondence: DM on Slack

Email (if absolute necessary):
dass.jyotikrishna@tamu.edu



TA

Karl Ott

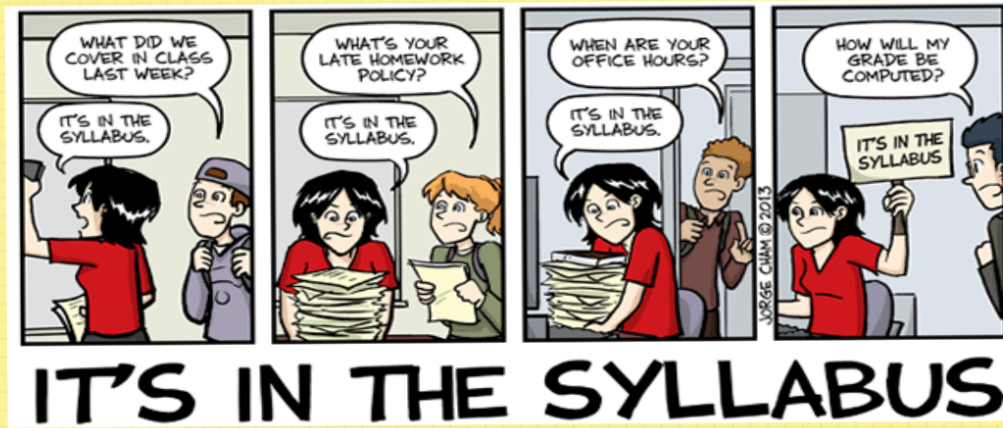
PhD candidate, Dept. of CSE

Office Hours:

Available during Lab times on ZOOM and via appointment.

Correspondence: DM on Slack

Email (if absolute necessary):
kaott@tamu.edu



AGGIE
HONOR CODE



An Aggie does not lie, cheat, or steal,
 or tolerate those who do

For additional information please
 visit <http://aggiehonor.tamu.edu>

ADA

Americans with Disabilities Act Policy Statement

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources in the Student Services Building or at **(979)845-1637** or visit <http://disability.tamu.edu>. Disabilities may include but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability-related needs with Disability Resources and their instructors as soon as possible.



The instructor would like to acknowledge the help and support provided by various faculties, directly and indirectly, to design the course curriculum. The course structure has been inspired by previous and current offerings of the CSCI 482/483 by Dr. Dylan Shell, Dr. Rabi Mahapatra, Dr. Shawna Thomas, Dr. Robin Murphy, and Dr. Ricardo Gutierrez-Osuna. The instructor also appreciates the immense contribution and experience of our TA, Karl Ott, in helping to run this course.